

WHAT IS CLAIMED IS:

1. A targeted recombinant adenovirus vector,
comprising:

5 (i) a gene encoding a heterologous protein;

(ii) a modified fiber protein comprising a first zipper
peptide, wherein said first zipper peptide is capable of forming
heteroduplex with a second zipper peptide via formation of coiled
coils; and

10 (iii) a gene encoding a fusion protein comprising said
second zipper peptide and a targeting ligand, wherein binding of
said first zipper peptide to said second zipper peptide connects said
targeting ligand to said modified fiber protein, thereby targeting
said adenovirus vector to a cell that expresses a cell surface
15 molecule that binds to said targeting ligand.

2. The targeted adenovirus vector of claim 1, wherein
said zipper peptides are selected from the group consisting of SEQ
20 ID No. 1-4.

3. The targeted adenovirus vector of claim 1, wherein said first zipper peptide is inserted at the HI loop or the carboxy terminal of said fiber protein.

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4. The targeted adenovirus vector of claim 1, wherein said fiber protein is a fiber-fibritin chimera, and said first zipper peptide is inserted at the carboxy terminal of said fiber-fibritin chimera.

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5. The targeted adenovirus vector of claim 1, wherein said targeting ligand is selected from the group consisting of CD40 ligand, a single chain fragment (scFv) of anti-human CD40 antibody, fibroblast growth factor, epidermal growth factor and somatostatin.

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6. The targeted adenovirus vector of claim 1, wherein said heterologous protein is selected from the group consisting of a tumor associated antigen, HER2/neu and carcinoemryonic antigen.

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7. A CD40-targeted recombinant adenovirus vector,
comprising:

(i) a gene encoding a heterologous protein;

5 (ii) a modified fiber protein comprising a first zipper
peptide, wherein said first zipper peptide is capable of forming
heteroduplex with a second zipper peptide via formation of coiled
coils; and

(iii) a gene encoding a fusion protein comprising said
10 second zipper peptide and a targeting ligand selected from the
group consisting of CD40 ligand and a single chain fragment (scFv)
of anti-human CD40 antibody, wherein binding of said first zipper
peptide to said second zipper peptide connects said targeting ligand
to said modified fiber protein, thereby targeting said adenovirus
15 vector to a CD40⁺ cell.

8. The targeted adenovirus vector of claim 7, wherein
said zipper peptides are selected from the group consisting of SEQ
20 ID No. 1-4.

9. The targeted adenovirus vector of claim 7, wherein said first zipper peptide is inserted at the HI loop or the carboxy terminal of said fiber protein.

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10. The targeted adenovirus vector of claim 7, wherein said fiber protein is a fiber-fibritin chimera, and said first zipper peptide is inserted at the carboxy terminal of said fiber-fibritin chimera.

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11. The targeted adenovirus vector of claim 7, wherein said CD40⁺ cell is a dendritic cell.

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12. The targeted adenovirus vector of claim 7, wherein said anti-human CD40 antibody is G28.5.

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13. The targeted adenovirus vector of claim 7, wherein said heterologous protein is selected from the group consisting of a tumor associated antigen, HER2/neu and carcinoemryonic antigen.

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14. The targeted adenovirus vector of claim 7, wherein said gene encoding said heterologous protein and said gene encoding said fusion protein are operably linked to a dendritic cell-specific promoter.

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15. A method of gene transfer to CD40⁺ cells, comprising the step of:

contacting said cell with the targeted adenovirus vector
15 of claim 7, wherein said targeted adenovirus vector mediates transfer of said gene encoding said heterologous protein to said cell.

16. The method of claim 15, wherein said CD40⁺ cells
20 are dendritic cells.